

> a file

FILE 'HOME' ENTERED AT 14:56:56 ON 28 OCT 2002

FILE 'HCAPLUS' ENTERED AT 15:01:40 ON 28 OCT 2002

11 10 S E4-E7  
12 H ELLIAC  
13 1 S E3  
14 2 S KOLIT  
15 3 S FUGISBERG Y1 AC  
16 18 S WERBITENY C1/AC  
17 3 S L1-3  
18 5 S L6 AND PARABICYCLOP  
19 3 S L7 AND HYDROLAS? 3 citations, RN's  
20 SELECT RN L8 1-3 were selected from ex. citation

FILE 'REGISTRY' ENTERED AT 15:04:52 ON 28 OCT 2002  
47 S E45-95 and searched in RegFile (47 cpd)

FILE 'HCAPLUS' ENTERED AT 15:05:20 ON 28 OCT 2002  
3 S L8 AND L9 cpds are assigned to each citation; 3  
cites w/ 47 cpds displayed

FILE 'REGISTRY' ENTERED AT 15:42:07 ON 28 OCT 2002  
24003 S NRS=1 AND (103.11.4 OR 16.127.2)/RID  
43407 S NRS<3 AND (103.11.4 OR 16.127.2)/RID

FILE 'LREGISTRY' ENTERED AT 15:48:21 ON 28 OCT 2002  
STR

FILE 'REGISTRY' ENTERED AT 15:49:49 ON 28 OCT 2002  
50 S L13 SSS SAM SUB=L12

1260 S L13 SSS FUL SUB=L12 1260 cpds in parent search STR was searched  
SAVE TEMP L15 MAR391P/A

498 S L15 AND 103.11.4/RID bicyclo ring  
762 S L15 AND 10.127.2/RID ring

191 S L17 AND NRS=1  
26 S L18 AND "(HYDROXYMETHYL)"  
19 S L18 AND "METHANOL"  
48 S L19-20

19 S L20 AND "AMINO"  
163 S L17 AND "METHANOL"  
70 S L18 AND "ESTER"  
96 S L18 AND "ACID"

27 S L25 NOT L24  
571 S L17 NOT L18  
217 S L16 AND NRS=1  
18 S L26 AND "2-AZABICYCLO[2.2.1]HEPT-5-ENE-3-ONE"

7 S L29 AND "ACETYL"  
22 S L28 AND "2-AZABICYCLO[2.2.1]HEPT-5-ENE-2-CARBOXYLIC ACID, 3-"  
18 S L28 NOT L30-31  
217 S L27 NOT L28

FILE 'HCAPLUS' ENTERED AT 16:01:10 ON 28 OCT 2002  
17 S L40 RET  
17 S L41 RET  
17 S L42 RET  
17 S L43 RET  
17 S L44 RET  
17 S L45 RET  
17 S L46 RET  
17 S L47 RET

> azabicyclos as reactants  
> cyclopentenes (II) as products  
> cyclopentene (II) as reactant

inventor search

to each citation; 3  
cites w/ 47 cpds  
displayed

L12, creating a  
subset in which

STR was searched;

every cpd

in this subset

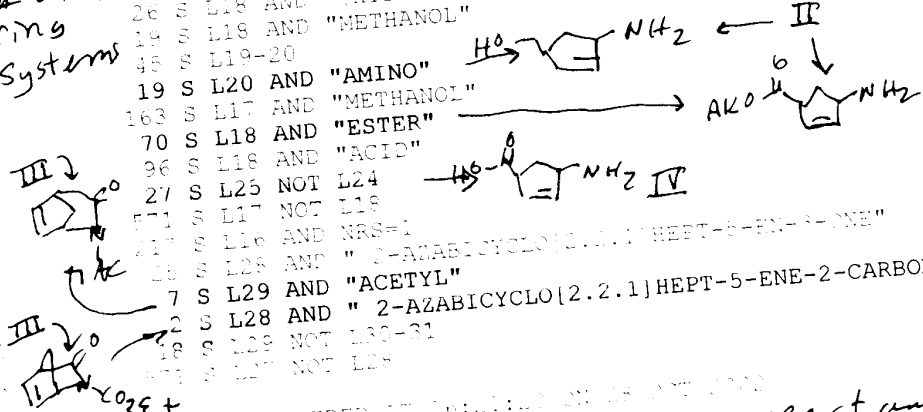
has 1-2 ring

system; each

cpd must have

103.11.4/rid or 16.127.2  
rid

rid = ring  
identifier



MARK 14746,191

141 1 S L41 FREE ← prep of ~~42~~ <sup>N42</sup>  
142 1 S L41-42 AND L41-42 = III → II  
143 1 S L41-42 AND L41 = II → IV  
144 1 S L41-42 AND L41-42 = III → IV  
145 1 S L41-42 AND L41-42 = III → IV  
146 1 S L41-42 AND L41-42 = III → IV  
147 1 S L41-42 AND L41-42 = III → IV  
148 1 S L41-42 AND L41-42 = III → IV  
149 1 S L41-42 AND L41-42 = III → IV  
150 1 S L41-42 AND L41-42 = III → IV  
151 1 S L41-42 AND L41-42 = III → IV  
152 1 S L41-42 AND L41-42 = III → IV  
153 1 S L41-42 AND L41-42 = III → IV  
154 1 S L41-42 AND L41-42 = III → IV  
155 1 S L41-42 AND L41-42 = III → IV  
156 1 S L41-42 AND L41-42 = III → IV  
157 1 S L41-42 AND L41-42 = III → IV

adding in relevant terms

L8 = inventors  
search  
results

FILE 'REGISTRY' ENTERED AT 16:18:37 ON 28 OCT 2002

158 1 S 162307-09-7/RN ←

FILE 'HCAPLUS' ENTERED AT 16:39:30 ON 28 OCT 2002

159 13 S L58 13 cites for → AC  
1 S 255839-18-0/RN#

FILE 'REGISTRY' ENTERED AT 16:59:56 ON 28 OCT 2002

160 1 S 255839-18-0/RN ←

FILE 'HCAPLUS' ENTERED AT 16:59:57 ON 28 OCT 2002

161 only applicatn 1 S L60 1 cite  
162 1 S L59 NOT (L45-48 OR L51-54 OR L8) 9 cites  
163 1 S L61 NOT (L45-48 OR L51-54 OR L8) no cites

FILE 'CASREACT' ENTERED AT 16:59:58 ON 28 OCT 2002

164 1 S L64  
165 2 S L64  
166 25 S L64 FUL 25 cites for enz or chemical transform.  
167 4 S L66 AND (BIOLOGICAL OR ENZYM? OR SUBTILISIN OR PROTEASE OR P 4 cites  
for  
enz. rxn

# STR for Reg/HCAPLUS

NAME 1 45, 141

=> d que 134

111 40400 SEA FILE=REGISTRY ABB=ON PLU=ON L13 AND 1 3.11.4/RID  
16.117.2 RII

L13

STR

~~A~~ ~~X~~ <sup>B</sup> Bond & nodes attached by the bond,  
are 'Ring or chain; allows  
for bicyclo cpds

← this STR gets all claimed cpds; it's  
the starting point for III &  
II

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT RLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 7

STEREO ATTRIBUTES: NONE

115 1260 SEA FILE=REGISTRY SUB-112 SSS FUL L13

116 496 SEA FILE=REGISTRY ABB=ON PLU=ON L18 AND 1 3.11.4/RID

126 117 SEA FILE=REGISTRY ABB=ON PLU=ON L16 AND NRS=1

129 25 SEA FILE=REGISTRY ABB=ON PLU=ON L28 AND "2-ACABICYCLO[1.1.1]  
HEFT-5-EN-3-ONE"

130 7 SEA FILE=REGISTRY ABB=ON PLU=ON L29 AND "ACETYL"

134 17 SEA FILE=HCAPLUS ABB=ON PLU=ON L36/RCT

# Cas react

NAME: CAS REACT

=> a que 167

L64 STR

PP

looking for any rxn where this  
azabicyclo is a reactant.

NAME ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ELEVEL IS LIMITED

NAME ATTRIBUTES:

RINGS ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 4

STEREO ATTRIBUTES: NONE

166 25 SEA FILE=CASREACT ONE FILE L64 161 REACTI IN

167 4 SEA FILE=CASREACT ABB-ON FILE=166 ANT BIOLOGICAL OR  
ENZYME OR SUBSTITUENT OR PROTEASE OR PROTEINASE OR LIPASE OR  
HYDROLASE

# Inventor Search results

MARK 12 746,491

> a hit as hits in 1

L10 ANSWER 1 OF 3 HCAPLUS CONTINUED

ACCESSION NUMBER: 2001-000000000000  
 DOCUMENT NUMBER: 102:1000000  
 TITLE: Preparation of optically active azabicycloheptenone derivatives by stereospecific enzymatic synthesis  
 INVENTOR S: Bernegger-Egli, Christine; Brax, Frank; Roduit, Jean Paul; Werbitzky, Oleg; Guggisberg, Yves  
 PATENT ASSIGNEE(S): Lonza A.-S., Swiss.  
 SOURCE: PAT. Int. Appl., 27 pp.  
 CDDEN: 1000000  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000003032	A1	20000120	WO 1999-EP4814	19990708
W: AS, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, GR, GU, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LG, MG, SI, SL, SE, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AT 0052803	A1	20000301	AT 1999-0100	19990000
EP 1098160	A1	20010512	EP 1098160	19990708
R: AI, BE, CH, DE, DK, ES, FR, GB, GR, IT, IL, IN, NL, SE, SI, SK, SL, TR, SI, LT, LV, FI, RO				
SI 200200007	TL	20020708	SI 2000-0100	19990708
NO 2001000121	A	20010108	NO 2001-121	20010108
PRIORITY APPLN. INFO.:				
EP 1998-112719 A 19980708				
EP 1998-103949 A 19981217				
WO 1999-EP4814 W 19990708				
OTHER SOURCE S: MARKPAT 10:1000000				

NR1

NR2

NR3

1

II

NRK1

NR

III

AB The invention relates to a biotechnol. method for producing optically active compds. of general formulas (I) and (II), wherein R1 represents acyl or acyloxy, and R2 represents H or C1-C10 alkyl, by reaction of the racemic lactam using a **hydrolase** in the presence of a nucleophile and in the presence of a base in a const. pH range. The invention also relates to the subsequent conversion of compd. I into the optically active 1-amino-4-(hydroxymethyl)-2-cyclopentene of formula (III). Racemic 2-acetyl-3-**azabicyclo**[2.2.1]hept-5-en-3-one 419.25 mL was dissd. with water 60 mL and a conc. subtilisin soln. 31.4 mL. This soln. was brought to pH 7.5 and incubated at 50 degrees. with vigorous stirring. After 48 h. 18,48% 2-Acetyl-2-**azabicyclo**[2.2.1]hept-5-en-3-one with an ee 99% was obtained. Final yield of purified product was 31%.

11 162307-09-7

RI: RCT (Reactant); RACT (Reactant or reagent)  
Enzymic resolu. of; prepn. of optically active  
**azabicycloheptenone** derivs. by stereospecific enzymic  
hydrolysis)

RN 162307-09-7 HCAPLUS

CN 1-Azabicyclo[2.2.1]hept-5-en-3-one, 2-acetyl- (9CI) (CA INDEX NAME)

11

NR

11 255839-18-0P

RI: RCT (Reactant); SYN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
Enzymic resolu. of; prepn. of optically active  
**azabicycloheptenone** derivs. by stereospecific enzymic  
hydrolysis)

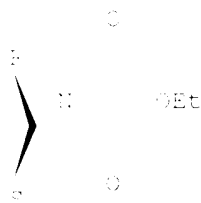
RN 1-Azabicyclo[2.2.1]hept-5-en-3-one, 2-acetyl- (9CI)

CN 1-Azabicyclo[2.2.1]hept-5-en-3-one, 2-acetyl- (9CI) (CA INDEX NAME)

Dr. Rolf H. Schindler, Chairman; Bill Peterson, Secretary; RHEI  
 Participation.

105-630-21-2 105-6305

Absolute stereochemistry.



RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); BLO (Biological study); FRFP (Preparation)

BN 43805-20-3 HQAPL25

100

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The number of transformed cells was determined by the number of colonies obtained on the selective medium. The results are the mean of three independent experiments. Error bars represent the standard deviation.





stereospecific enzymic hydrolysis

EN 1-48-1 HCAPLUS  
CN 1-48-1-1 (CA INDEX NAME)

H<sub>3</sub>C CH

EN 1-48-2 HCAPLUS  
CN 1-48-2-1 (CA INDEX NAME)

H<sub>3</sub>C CH<sub>2</sub> CH<sub>2</sub> OH

EN 1-48-3 HCAPLUS  
CN 1-48-3-1 (CA INDEX NAME)

H<sub>3</sub>C CH<sub>2</sub> CH<sub>2</sub> CH<sub>2</sub> OH

EN 1-48-4 HCAPLUS  
CN 1-48-4-1 (CA INDEX NAME)

0

9001-62-1, Lipase 9001-92-7, Proteinase  
9014-01-1, Subtilisin 9074-07-1, Proteinase, Aspergillus  
alkaline 37259-58-8, Serine Proteinase 39450-01-6  
EN: CAT (Catalyst used; UNES Uses.  
(prepn. of optically active azabicycloheptenone derivs. by  
stereospecific enzymic hydrolysis)

EN 901-62-1 HCAPLUS  
CN Lipase, triacylglycerol (901) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

EN 901-62-1 HCAPLUS  
CN Proteinase (901) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

EN 9014-01-1 HCAPLUS  
CN Subtilisin (901) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

EN 9074-07-1 HCAPLUS  
CN Proteinase, Aspergillus alkaline (901) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

EN 37259-58-8 HCAPLUS  
CN Proteinase, Serine (901) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

EN 39450-01-6 HCAPLUS  
CN Proteinase, Serine (901) (CA INDEX NAME)



studies 109-99-9, Tetrahydrofuran, biological studies  
 RI: BVM (Biological use, unclassified); BIL (Biological study); VMS  
 (Virus)

(prepn. of optically active azabicycloheptenone derivs. by  
 stereospecific enzymic hydrolysis)

- II 9001-62-1, Lipase 9001-92-7, Proteinase
- 9014-01-1, Schizolisin 9074-07-1, Proteinase, Aspergillus
- Aspergillus 37259-58-8, Aspergillus 39450-01-6

RI: VAI (Virus); VBI (Virus)

(prepn. of optically active azabicycloheptenone derivs. by  
 stereospecific enzymic hydrolysis)

- II 255839-20-4P

RI: SPN (Synthetic preparation); KRP (Preparation)

(prepn. of optically active azabicycloheptenone derivs. by  
 stereospecific enzymic hydrolysis)

REFERENCE COUNT:

THESE ARE THE ONLY REFERENCES AVAILABLE FOR THIS  
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

```

SUBROUTINE PREPARE (N, K, I, J, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z)
  DIMENSION I(1:N), J(1:N), L(1:N), M(1:N), N(1:N), O(1:N), P(1:N), Q(1:N), R(1:N), S(1:N), T(1:N), U(1:N), V(1:N), W(1:N), X(1:N), Y(1:N), Z(1:N)
  DO 10 I=1,N
    J(I)=I
    L(I)=I
    M(I)=I
    N(I)=I
    O(I)=I
    P(I)=I
    Q(I)=I
    R(I)=I
    S(I)=I
    T(I)=I
    U(I)=I
    V(I)=I
    W(I)=I
    X(I)=I
    Y(I)=I
    Z(I)=I
  10 CONTINUE
  RETURN
END

```

PATENT INFORMATION:

NO 6186893	A	19981205	US 1998-73553	19980306
HA 2237297	AA	19981113	CA 1998-2137240	19980311
NO 4602148	A	19981116	NO 1998-2149	19980310
FI 11015743	AD	19981111	JP 1998-128395	19980317
IN 1201794	A	19981216	IN 1998-104900	19980313
US 6137007	A	19981024	US 1998-37366	19980314
US 6252111	B1	19980620	US 1998-37366	19980314
US 6262391	B1	19980717	US 1998-37366	19980314

OTHER SOURCE(S):                   MERCAT 130:24137

10. A new procedure for the prepn. of 10,13'- or 13,10'-4'-1'-amin-4'-  
thien-4-yl-purin-1-yl-, -cyclopentene-1-methanol (II) is claimed.  
11. -2-Azabicyclo[2.2.1]hept-5-en-3-one is acylated at the  
amide NH and the compd. is cleaved to form the racemic acylamino  
cyclopentene diols. This is stereoselectively amplified by a  
diastereom. process to produce 10,13'- or 13,10'-1'-amin-4'-hydroxy-  
1'-cyclopentene. A 4th step is the reaction with N'-sub-4,6-  
diaminopyrimidine-2-yl formamide to produce 10,13'- and 13,  
10,13'-4'-1'-amin-4'-thien-4'-formamido-4'-pyrimidin-2-yl-  
cyclopentene-1-methanol, which are cleaved to give 10,13'- and 13,

9012-56-0P, N-Acetylglucosaminidase hydrolase

RL: Basic Physiological activity of afferents, except sensory; RFL: Physiological study, unclassified; RLI: Physiology; RLE: Physiology, experimental; RLI: Physiological study; IRMI: Preparation.

\*  $\chi^2$  test for independence.  $\chi^2 = 10.2$ ,  $df = 1$ ,  $p = 0.002$ .  $\chi^2$  test for independence.  $\chi^2 = 10.2$ ,  $df = 1$ ,  $p = 0.002$ .

[illegible][illegible][illegible]

136522-33-3P 216481-88-8P

BL: BMF (Biochemical manufacture); BPN (Biosynthetic preparation); SPN (Synthetic preparation); BIL (Biological study); PREP (Preparation); multistep process for the propr. of (1R,4S)- and/or

(1R,4S)-4-(2-amino-6-chloro-9H-purin-8-yl)-5-cyclopentene-1-methanol.

BN 16622-33-3 HCAPLUS

CN 1-Cyclopentene-1-methanol, 4-(2-amino-6-chloro-9H-purin-8-yl)-, (1R,4S)-  
RCI CA INDEX NAME

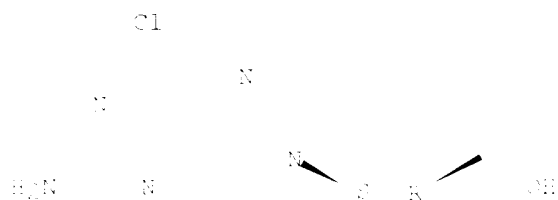
Absolute stereochemistry. Rotation: -.



BN 216481-88-8 HCAPLUS

CN 2-Cyclopentene-1-methanol, 4-(2-amino-6-chloro-9H-purin-8-yl)-, (1R,4S)-  
RCI CA INDEX NAME

Absolute stereochemistry.



IT 168960-19-8P

BL: BPN (Biosynthetic preparation); FRP (Properties); PUR (Purification or recovery); RCT (Reactant); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent)

multistep process for the propr. of (1R,4R)- and/or

(1R,4S)-4-(2-amino-6-chloro-9H-purin-8-yl)-5-cyclopentene-1-methanol

BN 168960-19-8 HCAPLUS

CN 1-Cyclopentene-1-methanol, 4-amino-, synchthonic, (1R,4S)-  
RCI CA INDEX NAME

Absolute stereochemistry. Rotation: -.



● H<sub>2</sub>N





MARK 101 4,241

Process ; Reagent ; Reagent or reagent

multistep process for the prep. of 1d, 1b - and 1c

1b, 4F - 4- (4- amino - 2- (4- (hydroxymethyl) - 2- cyclopenten-1-yl) - 1-phenyl) - 1-ethanone

1d 199395-81-7 HOAPLUS

CN Acetamide, N-[4-(hydroxymethyl)-2-cyclopenten-1-yl]- (9CI) (CA INDEX NAME)

ANNE CH<sub>2</sub> OH

RN 199395-81-8 HOAPLUS

CN Propanamide, N-[4-(hydroxymethyl)-2-cyclopenten-1-yl]- (9CI) (CA INDEX NAME)

1c

1-b 1 NH CH<sub>2</sub> OH

RN 199395-82-9 HOAPLUS

CN Benzeneacetamide, N-[4-(hydroxymethyl)-2-cyclopenten-1-yl]- (9CI) (CA INDEX NAME)

O

Et CH<sub>2</sub> C NH CH<sub>2</sub> OH

RN 199395-84-1 HOAPLUS

CN Propanamide, N-[4-(hydroxymethyl)-2-cyclopenten-1-yl]- (9CI) (CA INDEX NAME)

1c

Et NH CH<sub>2</sub> OH

RN 199395-85-1 HOAPLUS

CN Propanamide, N-[4-(hydroxymethyl)-2-cyclopenten-1-yl]- (9CI) (CA INDEX NAME)

1-b 1 NH CH<sub>2</sub> OH

199395-81-7 199395-82-9 199395-84-1 199395-85-1

199395-81-7





CH<sub>3</sub> Et  
N

SN 144341-07-1 HQAPLUS  
IN 1-Azabicyclo[3.2.1]hept-5-en-2-one, 2-(2-methyl-1-oxopropyl)- 401 1A  
INDEX NAME

Et  
N

O

SN 144395-78-1 HQAPLUS  
IN 1-Azabicyclo[3.2.1]hept-5-en-2-one, 2-(2-methyl-1-oxopropyl)- 401 1A  
INDEX NAME

O

C Et-1  
N

O

SN 144441-91-1 HQAPLUS  
IN 1-Azabicyclo[3.2.1]hept-5-en-2-one, 2-(2-methyl-1-oxopropyl)- 401 1A  
INDEX NAME

O

CH<sub>3</sub>Cl  
N

SN 144441-91-1 HQAPLUS  
IN 1-Azabicyclo[3.2.1]hept-5-en-2-one, 2-(2-methyl-1-oxopropyl)- 401 1A  
INDEX NAME

49805-30-3 12H

11 49805-30-3, 4-Azabicyclo[2.2.1]hept-3-en-2-one  
 RI: RCT (Reagent); RAL (Reagent or reagent)  
 multistep process for the prepn. of (1S,4R)- and/or  
 (1R,4S)-4-[2-amino-6-chloro-9-H-purin-9-yl]-2-cyclopentene-1-methanol  
 RI: 49805-30-3, RCT, RAL  
 RI: 4-Azabicyclo[2.2.1]hept-3-en-2-one, 49805-30-3, INDEX NAME

12H

3

12 ICM 012P017-18  
 ICS 012P013-02; 0070233-13; 0070231-18; 0070231-20  
 13 012P017-18, 012R001-06; 012P017-18, 012R001-08; 012P 17-18, 012R001-09;  
 012P017-18, 012R001-07; 012P017-18, 012R001-08; 012P 17-18, 012R001-11;  
 012P017-18, 012R001-14  
 14 16-2 (Fermentation and Bioindustrial Chemistry)  
 Section cross-references: 7, 17  
 stereoselective aminochloropurinylicyclopentenemethanol synthesis  
 15 Rhodococcus  
 Rhodococcus  
 Rhodococcus erythropolis  
 Rhodococcus erythropolis  
 multistep process for the prepn. of (1S,4R)- and/or  
 (1R,4S)-4-[2-amino-6-chloro-9-H-purin-9-yl]-2-cyclopentene-1-methanol  
 16 9012-56-0P, N-Acetylaminocalcohol hydrolase  
 RI: BAC (Biological activity or effector, except adverse); BSC (Biological  
 study, unclassified); ERP (Properties); FVE (Fermentation & recovery;  
 BSC (Biological study); PREP (Preparation)  
 from Rhodococcus erythropolis  
 17 136522-33-3P 216481-88-8P  
 RI: BWF (Bioindustrial manufacture); BIN (Biosynthetic preparation); SPN  
 Synthetic preparation; BICL (Biological study); PREP (Preparation)  
 multistep process for the prepn. of (1S,4R)- and/or  
 (1R,4S)-4-[2-amino-6-chloro-9-H-purin-9-yl]-2-cyclopentene-1-methanol  
 18 168960-19-8P  
 RI: BIN (Biosynthetic preparation); ERP (Properties); FVE (Fermentation &  
 recovery); RCT (Reagent); SPN (Synthetic preparation); BICL (Biological  
 study); PREP (Preparation); RAL (Reagent or reagent)  
 multistep process for the prepn. of (1S,4R)- and/or  
 (1R,4S)-4-[2-amino-6-chloro-9-H-purin-9-yl]-2-cyclopentene-1-methanol  
 19 130931-86-1P 168960-18-7P 171887-04-0P  
 216481-85-5P  
 RI: BIN (Biosynthetic preparation); ERP (Properties); FVE (Fermentation &  
 recovery); SPN (Synthetic preparation); BICL (Biological study); PREP  
 Preparation  
 multistep process for the prepn. of (1S,4R)- and/or  
 (1R,4S)-4-[2-amino-6-chloro-9-H-purin-9-yl]-2-cyclopentene-1-methanol

- IT 136522-35-5P  
 RL: BPN (Biosynthetic preparation); RCT (Reactant); SPN (Synthetic preparation); BPN (Biological study); PREP (Preparation); RACT (Reactant or reagent)  
 (multistep process for the prepn. of (1S,4R)- and/or (1R,4S)-4-(2-amino-6-chloro-9-H-purin-9-yl)-2-cyclopentene-1-methanol)
- IT 216481-84-4P 216481-86-6P  
 RL: BPN (Biosynthetic preparation); SPN (Synthetic preparation); BPN (Biological study); PREP (Preparation)  
 (multistep process for the prepn. of (1S,4R)- and/or (1R,4S)-4-(2-amino-6-chloro-9-H-purin-9-yl)-2-cyclopentene-1-methanol)
- IT 199395-80-7P 199395-81-8P 199395-82-9P  
 199395-84-1P 199395-85-2P 216481-83-3P  
 RL: BPR (Biological process); BSU (Biological study, unclassified); FRP (Properties); PUR (Purification or recovery); RCT (Reactant); SPN (Synthetic preparation); BGL (Biological study); PREP (Preparation); BPR (Process); RACT (Reactant or reagent)  
 (multistep process for the prepn. of (1S,4R)- and/or (1R,4S)-4-(2-amino-6-chloro-9-H-purin-9-yl)-2-cyclopentene-1-methanol)
- IT 9014-06-6  
 RL: CAT (Catalyst use); USES (Uses)  
 (multistep process for the prepn. of (1S,4R)- and/or (1R,4S)-4-(2-amino-6-chloro-9-H-purin-9-yl)-2-cyclopentene-1-methanol)
- IT 162307-09-7P 199395-75-0P 199395-76-1P  
 199395-77-2P 199395-78-3P 216481-82-2P  
 216481-87-7P  
 RL: FRP (Properties); PUR (Purification or recovery); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (multistep process for the prepn. of (1S,4R)- and/or (1R,4S)-4-(2-amino-6-chloro-9-H-purin-9-yl)-2-cyclopentene-1-methanol)
- IT 49805-30-3, 2-Azabicyclo[2.2.1]hept-5-en-3-one  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (multistep process for the prepn. of (1S,4R)- and/or (1R,4S)-4-(2-amino-6-chloro-9-H-purin-9-yl)-2-cyclopentene-1-methanol)

[illegible][illegible][illegible]

9012-56-0P, Amiga 500

azabicycloheptenones and 2,3,4,5,6,7,8-hepta-

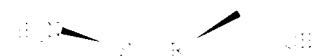
1. THE UNITED STATES OF AMERICA

136522-30-0P 136522-35-5P

136522-30-0P 136522-35-5P  
 3L: BIF (Bioindustrial manufacture; BEN Biosynthetic preparation; BSM  
 (Synthetic preparation); BLOL (Biological study; PREP Preparation)  
 (prepn. of amino acids and deriva. thereof from  
 azabicycloheptenones and microbial metab. of the products,

[illegible]

Asymmetric stereochemistry. Notation: (+), (-).



1-pentene-1, methanol, 4-methyl-, [C<sub>5</sub>H<sub>10</sub>O], A. INDEX NAME.

Applicable stereochemistry. Notation:  $\pm$ .

199395-80-7P 199395-81-8P 199395-82-9P  
199395-83-0P 199395-84-1P 199395-85-2P

[illegible]

IT 9015-68-3, Asparaginase  
 RI: CAT (Catalytic core); CAT (Catalytic core)  
 (prepn. of amino acids and derivs. thereof from  
**azabicycloheptenones** and microbial metab. of the products)  
 RI 4-10-67-3 HCAPLUS  
 RI Asparaginase (RI, CAT) (CA INDEX NAME)

... STRUCTURE DIAGRAM IS NOT AVAILABLE ...  
 IT 49805-30-3, 2-Azabicyclo[2.2.1]hept-5-en-3-one  
 RI: RCT (Reactant); RACT (Reactant or reagent)  
 (prepn. of amino acids and derivs. thereof from  
**azabicycloheptenones** and microbial metab. of the products)  
 RI 4-8-65-35-3 HCAPLUS  
 RI 2-Azabicyclo[2.2.1]hept-5-en-3-one (RCT) (CA INDEX NAME)

NR

U

IT 162307-09-7P 199395-75-0P 199395-76-1P  
 199395-77-2P 199395-78-3P 199395-79-4P  
 RI: RCT (Reactant); SYN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (prepn. of amino acids and derivs. thereof from  
**azabicycloheptenones** and microbial metab. of the products)  
 RI 162307-09-7 HCAPLUS  
 RI 2-Azabicyclo[2.2.1]hept-5-en-3-one, 3-acetyl- (RCT) (CA INDEX NAME)

U

N

Ac

RI 199395-75-0 HCAPLUS  
 RI 2-Azabicyclo[2.2.1]hept-5-en-3-one, 3-(1-oxopropyl)- (RCT) (CA INDEX NAME)

U

N

U

RI 199395-76-1 HCAPLUS  
 RI 2-Azabicyclo[2.2.1]hept-5-en-3-one, 3-(1-oxopropyl)- (RCT) (CA INDEX NAME)





of N-acetylaminocals. hydrolase

- IT Agrobacterium  
Azalipones xyloxylinans  
Azalipones  
Bacillus simplex  
Fermentation  
Irishdomonas  
Rhodococcus  
Rhodococcus erythropolis  
(prepn. of amino alcs. and derivs. thereof from  
**azabicycloheptenones** and microbial metab. of the products)
- 11 9012-56-0P, Amidase  
RI: BAC (Biological activity or estimator, except enzyme; B.C. Biol. Chem. occurrence); BSU (Biological study, unclassified); CAT (Catalyst use); IRI (Properties); PUR (Purification or recovery); BIOL (Biological study); BCC (Occurrence); PREP (Preparation); USES (Uses)  
(prepn. of amino alcs. and derivs. thereof from  
**azabicycloheptenones** and microbial metab. of the products)
- 11 136522-30-0P 136522-35-5P  
RI: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation)  
(prepn. of amino alcs. and derivs. thereof from  
**azabicycloheptenones** and microbial metab. of the products)
- IT 199395-80-7P 199395-81-8P 199395-82-9P  
199395-83-0P 199395-84-1P 199395-85-2P  
RI: BPR (Biological process); BSU (Biological study, unclassified); RCT (Reactant); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); PROC (Process); RACT (Reactant or reagent)  
(prepn. of amino alcs. and derivs. thereof from  
**azabicycloheptenones** and microbial metab. of the products)
- IT 9015-68-3, Asparaginase  
RI: CAT (Catalyst use); USES (Uses)  
(prepn. of amino alcs. and derivs. thereof from  
**azabicycloheptenones** and microbial metab. of the products)
- IT 49805-30-3, 2-Azabicyclo[2.2.1]hept-5-en-3-one  
RI: RCT (Reactant); RACT (Reactant or reagent)  
(prepn. of amino alcs. and derivs. thereof from  
**azabicycloheptenones** and microbial metab. of the products)
- IT 162307-09-7P 199395-75-0P 199395-76-1P  
199395-77-2P 199395-78-3P 199395-79-4P  
RI: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(prepn. of amino alcs. and derivs. thereof from  
**azabicycloheptenones** and microbial metab. of the products)

157732-11-1P

L51 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 1981 ACS

ACCESSION NUMBER: 157732-11-1P HCAPLUS  
 DOCUMENT NUMBER: 157732-11-1P  
 TITLE: Lipase-catalyzed resolution of 2-azabicyclo[2.2.1]hept-5-en-3-ones  
 AUTHOR: Nakani, Hiroshi; Iwata, Masumi; Miyama, Yuki; Hara, Hisao  
 ORGANIZATION: Tensho College Pharmacy, Otsu, 520, Japan  
 JOURNAL: Tetrahedron Asymmetry 1990, 1, 1, 1-10  
 COUNTRY: JAPAN; ISSN: 1023-4166  
 PUBLISHER: Elsevier  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 11

157732-11-1P

157732-11-1P

157732-11-1P

1

11

AB The lipase-catalyzed asym. resolin. of 2-azabicyclo[2.2.1]hept-5-en-3-ones was reported. Non-racemic chiral 2-azabicyclo[2.2.1]hept-5-en-3-ones were obtained conveniently by lipase-catalyzed enantioselective transesterification or hydrolysis of 2-(hydroxymethyl)-2-azabicyclo[2.2.1]hept-5-en-3-one or 2-(acetyloxymethyl)-2-azabicyclo[2.2.1]hept-5-en-3-one. The resolin. of 1,1'-2-(hydroxymethyl)-2-azabicyclo[2.2.1]hept-5-en-3-one (I) gave (1R,2S)-2-(acetyloxymethyl)-2-azabicyclo[2.2.1]hept-5-en-3-one which was hydrolyzed to give (1R)-2-(hydroxymethyl)-2-azabicyclo[2.2.1]hept-5-en-3-one. Ring opening of the latter gave (-)-1R-is.-4-(acetylamino)-5-cyclopentene-1-carboxylic acid Me ester (II) which is an intermediate for carbocin.

157732-11-1P 183074-62-6P

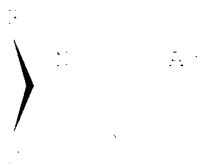
RE: RCT (Reactant); SYN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

Lipase-catalyzed resolin. of 2-azabicyclo[2.2.1]hept-5-en-3-ones

157732-11-1P HCAPLUS

2-Azabicyclo[2.2.1]hept-5-en-3-one, 2-(acetyloxymethyl)-, (1R,2S)-, 901  
 CA INDEX NAME

Keywords: stereochemistry; Rotation; -



157732-11-1P HCAPLUS

2-Azabicyclo[2.2.1]hept-5-en-3-one, 2-(acetyloxymethyl)-, (1R,2S)-, 901  
 CA INDEX NAME

Re: As  
H

11 127061-46-5P, 10-oxo-4-Acetylamino-1-cyclopentene-1-carboxylic acid methyl ester  
 RI: SYN (Synthesis; preparation; PREP (Preparation)  
 Lipase-catalyzed resolin. of 2-azabicyclo[2.2.1]hept-5-en-3-one  
 RI: 127061-46-5 HOABIMC  
 RI: 1-cyclopentene-1-carboxylic acid, 4-acetylamino-, methyl ester,  
 10-oxo- (RI) (CA INDEX NAME)

Relative stereochemistry.

ASNN  
 P S CMC

Reading

151 ANSWER 1 OF 1 HOABIMC COPYRIGHT 1984 APC  
 12 14-4 Allicyclic Compounds  
 Section cross-references :  
 13 azabicycloheptenone lipase enzymic resolin;  
 cyclopentenecarboxylate amine (reag. resolin; transesterification)  
 azabicycloheptenone lipase enzymic resolin.  
 14 Configuration  
 (abs., lipase-catalyzed resolin. of 2-azabicyclo[2.2.1]hept-5-en-3-ones)  
 15 Resolution  
 (enzymic, lipase-catalyzed resolin. of 2-azabicyclo[2.2.1]hept-5-en-3-ones)  
 16 4831-62-1, Lipase  
 RI: CAT (Catalyst used; USHS (Uses)  
 Lipase-catalyzed resolin. of 2-azabicyclo[2.2.1]hept-5-en-3-ones  
 17 4-8-8-3, 2-Azabicyclo[2.2.1]hept-5-en-3-one  
 RI: RCT (Reactant); RACT (Reactant or reagent)  
 Lipase-catalyzed resolin. of 2-azabicyclo[2.2.1]hept-5-en-3-one  
 18 1400-16-4, 2-2-Azabicyclo[2.2.1]hept-5-en-3-one 1, 2, 3-trimethyl-,  
 1, 2, 3-trimethyl- Hydroxymethyl-2-azabicyclo[2.2.1]hept-5-en-3-one  
 157732-11-1P 1400-16-4 1400-16-4 183074-62-6P  
 RI: RCT (Reactant); SYN (Synthesis; preparation; PREP  
 (Preparation; RACT (Reactant or reagent)  
 Lipase-catalyzed resolin. of 2-azabicyclo[2.2.1]hept-5-en-3-one  
 19 11-33-3-1P, Carbonyl, intermediates 127061-46-5P,  
 10-oxo-4-Acetylamino-1-cyclopentene-1-carboxylic acid methyl ester  
 1, 2, 3-trimethyl-, 2-2-Azabicyclo[2.2.1]hept-5-en-3-one 1, 2, 3-trimethyl-  
 RI: SYN (Synthesis; preparation; PREP (Preparation)  
 Lipase-catalyzed resolin. of 2-azabicyclo[2.2.1]hept-5-en-3-one

1. *Chlorophyll a* and *Chlorophyll b* were determined by the method of Lichtenthaler and Whistler (1973). The total chlorophyll content was determined by the method of Arar and Cook (1980). The carotenoid content was determined by the method of Lichtenthaler and Whistler (1973). The total carotenoid content was determined by the method of Arar and Cook (1980). The total protein content was determined by the method of Lowry et al. (1951). The total lipid content was determined by the method of Bligh and Dyer (1959). The total carbohydrate content was determined by the method of Dubois and Gilles (1950). The total nucleic acid content was determined by the method of Burton (1956). The total ash content was determined by the method of AOAC (1990). The total moisture content was determined by the method of AOAC (1990). The total dry matter content was determined by the method of AOAC (1990). The total organic acid content was determined by the method of AOAC (1990). The total alkaloid content was determined by the method of AOAC (1990). The total saponin content was determined by the method of AOAC (1990). The total tannin content was determined by the method of AOAC (1990). The total flavonoid content was determined by the method of AOAC (1990). The total phenol content was determined by the method of AOAC (1990). The total terpenoid content was determined by the method of AOAC (1990). The total steroid content was determined by the method of AOAC (1990). The total glycoside content was determined by the method of AOAC (1990). The total alkaloid content was determined by the method of AOAC (1990). The total saponin content was determined by the method of AOAC (1990). The total tannin content was determined by the method of AOAC (1990). The total flavonoid content was determined by the method of AOAC (1990). The total phenol content was determined by the method of AOAC (1990). The total terpenoid content was determined by the method of AOAC (1990). The total steroid content was determined by the method of AOAC (1990). The total glycoside content was determined by the method of AOAC (1990).

**Figure 1**

10

100

1,1-Dimethyl-2,2,4,4-tetrahydronaphthalene

Alkylated stereoisomers. Rotation 100.



162307-09-7

BL: BPF (Biological process); BPL (Biological study, unpublished);

RCT (Reactant); RIL (Biological study); IF (Infrared); RCT

(Reagent); RCT

(prep. enantiomerically enriched N-derivatized lactams)

BL: 162307-09-7 (HAPLUS)

IN: 1-Arabicyclo[2.2.1]hept-2-en-3-one, 1-acetyl- (ACT) (CA INDEX NAME)

100

10

Ac

100 162307-09-7

100 162307-09-7; 162307-09-7

100 162307-09-7 (Fermentation and Bioindustrial Chemistry)

ST: lactam arabicycloheptenone resins subtilisin

ST: resolution (separation)

(biol.; prep. enantiomerically enriched N-derivatized lactams)

100 162307-09-7, N-protected

BL: BPF (Biological process); BPL (Biological study, unpublished); BIL

(Biological study); PREP (Preparation)

(prep. enantiomerically enriched N-derivatized lactams)

100 168960-18-7P 168960-18-7P

BL: BPN (Biosynthetic preparation); BIL (Biological study); PREP

(Preparation)

(prep. enantiomerically enriched N-derivatized lactams)

100 162307-09-7P

BL: BPN (Biosynthetic preparation); BIL (Biological study, unpublished); BIL

(Reactant); BIL (Biological study); PREP (Preparation); RCT (Reactant or reagent)

(prep. enantiomerically enriched N-derivatized lactams)

100 162307-09-7 162307-09-7

BL: BPF (Biological process); BPL (Biological study, unpublished);

RCT (Reactant); RIL (Biological study); IF (Infrared); RCT

(Reagent); RCT

(prep. enantiomerically enriched N-derivatized lactams)

100 162307-09-7, 162307-09-7

BL: CAT (Catalyst used); PREP (Preparation)

(prep. enantiomerically enriched N-derivatized lactams)

REFERENCES CITED:

THESE ARE CITED REFERENCES AVAILABLE FOR THIS  
PAPER. ALL CITATIONS AVAILABLE IN THE BPF + BIL



[illegible]

Doc. No. 11-28-19970002 8 : 41, 11

11. 11-19, enzymic

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THE UNIVERSITY OF CHICAGO PRESS

100-102-4

substrate and inhibitor specificity of glyoxamide ribonucleotide  
transformylase from chicken liver)

EL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); PR (Properties); BIOL (Biological study)

$\frac{d}{dt} \left( \frac{\partial L}{\partial \dot{x}} \right) = \frac{\partial L}{\partial x}$

substrate and inhibitor specificity of glycinamide ribonucleotide  
transformylase from chicken liver

[illegible]

1.  $\mathcal{C} = \mathcal{C}_1 \cup \mathcal{C}_2$  and  $\mathcal{C}_1 \cap \mathcal{C}_2 = \emptyset$ .

Figure 1. Schematic representation of the experimental design. The subjects were divided into two groups: the control group (n = 10) and the experimental group (n = 10). The control group received a placebo (P) and the experimental group received a 100 mg dose of the active ingredient (A). The subjects were divided into two groups: the control group (n = 10) and the experimental group (n = 10). The control group received a placebo (P) and the experimental group received a 100 mg dose of the active ingredient (A). The subjects were divided into two groups: the control group (n = 10) and the experimental group (n = 10). The control group received a placebo (P) and the experimental group received a 100 mg dose of the active ingredient (A).

127061-46-5

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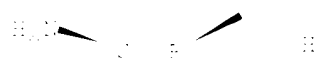




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<sup>1</sup> *Journal of the American Medical Association*, 2000; 283: 2686-2692.

MARK 1748, -91



BN 1748-35-1 H/ANILUS  
 CN 2-Cyclopentene-1-methanol, 4-amino-, (1S,4R) - (CN) (CA INDEX NAME)  
 Absolute stereochemistry. Rotation (-).



BN 1748-35-1 H/ANILUS  
 CN 2-Cyclopentene-1-methanol, 4-amino-, (1S,4R) - (CN) (CA INDEX NAME)



BN 1748-35-1 H/ANILUS  
 CN 2-Cyclopentene-1-methanol, 4-amino-, (1S,4R) -, (2R,3R) -2,3-dihydroxybutanedioate (1:1) (Salt, (CN)) (CA INDEX NAME)

CM 1

GRN 1748-35-1  
 CMP 1748-35-1

Absolute stereochemistry. Rotation (-).



KN 1

BN 1748-35-1  
 CN 1748-35-1

Absolute stereochemistry.

OH



BN 1748-35-1 H/ANILUS

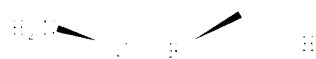
NAME 2-11,11

RN 2-11,11-1-methanol, 4-amino-, (1R,4R)-, (2S,3S)-3,3-dihydroxybutanedioate (1:1) (salt) (CI) (CA INDEX NAME)

CM 1

RM 136522-31-  
CWF 06 H11 N 0

Absolute stereochemistry. Rotation. -1.

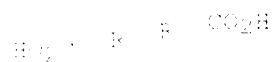


CM 2

RM 87-69-4  
CWF C4 H6 O6

Absolute stereochemistry.

OH



OH

RN 229177-52-0 HCAPLUS

CN 2-Cyclopentene-1-methanol, 4-amino-, (1S,4R)-, (2S,3S)-3,3-dihydroxybutanedioate (1:1) (salt) (CI) (CA INDEX NAME)

CM 1

RM 136522-33-5  
CWF 06 H11 N 0

Absolute stereochemistry. Rotation. -1.



CM

RM 11-11-  
CWF 04 H6 O6

Absolute stereochemistry.



162307-09-7

RI: RCT (Reactant); RACT (Reactant or reagent)

(prepn. of 4-amino-2-cyclopentenemethanol enantiomers as drug intermediates)

RI: 162307-09-7 RACT (Reactant)

RI: 4-Aminocyclopent-2-en-1-ol, 2-acetyl- (RI: 162307-09-7) (INDEX NAME)

162307-09-7

RI

Ac

ICM 007C213-00

ICM 007C213-42; 007C213-02; 007C213-10; 007C213-32

IC 24-4 (Alicyclic Compounds)

RI: aminocyclopentenemethanol enantiomer prepn. drug intermediate

RI: Alcohols, preparation

RI: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)

(chiral, amino; prepn. of 4-amino-2-cyclopentenemethanol enantiomers as drug intermediates)

IT 01942-42-3P 171887-44-3P 229177-44-3P

RI: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(prepn. of 4-amino-2-cyclopentenemethanol enantiomers as drug intermediates)

IT 122624-72-0P 130331-86-1P 136522-30-0P 136522-33-3P

136522-35-5P 168960-18-7P 216481-85-5P 216481-88-6P

229177-39-3P 229177-46-2P 229177-49-5P

229177-52-0P

RI: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)

(prepn. of 4-amino-2-cyclopentenemethanol enantiomers as drug intermediates)

IT 141-18-3, Butyryl chloride 48818-3-3, 4-Aminocyclopent-2-en-1-ol, 2-acetyl- (RI: 162307-09-7) (INDEX NAME)

162307-09-7 168960-18-7 171887-44-3P 229177-44-3P

RI: RCT (Reactant); RACT (Reactant or reagent)

(prepn. of 4-amino-2-cyclopentenemethanol enantiomers as drug intermediates)



[illegible]

U.S. AIR FORCE 104-1-3

L62 ANSWER 1 OF 9 HCAPLUS CONFIDENTIAL 10/2/2003

NUMBER OF NUMBER:

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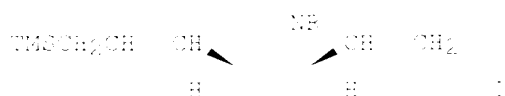
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 95. *Environ. Sci. Technol.* 1991, 25, 2069-2074.  
 96. *Environ. Sci. Technol.* 1991, 25, 2075-2080.  
 97. *Environ. Sci. Technol.* 1991, 25, 2081-2086.  
 98. *Environ. Sci. Technol.* 1991, 25,

[illegible][illegible]

1. *Chlorophyll a* (Chl *a*) and *Chlorophyll b* (Chl *b*) were determined using a spectrophotometer (Shimadzu UV-1601U) at 663 nm and 646 nm, respectively. The concentrations of Chl *a* and Chl *b* were calculated using the following equations: Chl *a* (mg g<sup>-1</sup>) = 12.7 (OD<sub>663</sub> - 2.29 OD<sub>646</sub>) and Chl *b* (mg g<sup>-1</sup>) = 22.9 (OD<sub>646</sub> - 0.21 OD<sub>663</sub>). The total chlorophyll content (Chl *a* + Chl *b*) was also calculated.

[illegible]

10



45 An examn. of the ring-opening cross-metathesis reaction of  $\alpha$ -subbicyclo[2.2.1]hept-5-en-2-one (ABH) with allyltrimethylsilane in the presence of Grubbs' catalyst showed that a pair of regioisomeric products 1 (R = Boc) and 11 (R = Boc) could be isolated instead of the known regioselective formation of 1 (R = Boc).

162307-09-7

 $\text{R}^1$ , R<sup>2</sup>: Reactant; R<sup>3</sup>: Product or reagent
$$Y_{11}^2 = Y_{11}^2 + Y_{11}^2 = 1.0000 + 1.0000 = 2.0000 \quad Y_{12}^2 = Y_{12}^2 + Y_{12}^2 = 0.0000 + 0.0000 = 0.0000$$
[illegible]

33 102-107-19-7 102-107

[illegible]

1

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<sup>a</sup> The number of subjects who were included in each group was determined by the number of subjects who completed the study. The number of subjects who were excluded from the analysis was determined by the number of subjects who did not complete the study.

As a result, the model is able to capture the nonlinear relationship between the variables and the response variable. The model is able to capture the nonlinear relationship between the variables and the response variable. The model is able to capture the nonlinear relationship between the variables and the response variable.

Table 1. *Continued*

1. *Journal of the American Medical Association*, 1997; 277: 1039-1043.

100

[illegible][illegible]

PRIORITY APPLN. INFO.:	CH	1997-2789	A	19971127
	CH	1997-2781	A	19971203
	CH	1998-153	A	19980121
	CH	1998-123	A	19980327
	EE	1998-118896	A	19981007
	ES	1998-198427	A3	19981124

14 Title compds. were prepd. by metal hydride redn. of 4-substituted 2,2,3,3-tetra-5-en-1-one.

162307-09-7

RL: RCT (Reactant); RACT (Reactant or reagent)  
(prepn. of 4-imino-2-cyclopentenemethanol esters and  
intermediates)

[illegible][illegible]

23

N

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[illegible][illegible][illegible][illegible]

Table 1. *Salmonella* serotypes and phage types isolated from the 1990-1991 and 1991-1992 seasons in the United States

<sup>a</sup> Values are means ± SD.

100



AB A simple and efficient process for the enantioselective resolu. of N-substituted L-arabicyclo[2.2.1]hept-5-en-3-ones has been developed using mol. available chiral auxiliary enzymes. This offers a practical approach to the prepn. of enantiomerically pure N-substituted L-arabicyclo[2.2.1]hept-5-en-3-ones.

162307-09-7P

EN: ECT Reagent ; EN: Synthetic preparation ; 1998 Reagent ; ECT Reagent or Reagent

Enzymic procedure for resolu. of N-substituted L-arabicyclo[2.2.1]hept-5-en-3-ones

EN 162307-09-7P ECT

EN 162307-09-7P ECT

N

A

REFERENCE COUNT: 11 THERE ARE 11 OTHER REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE AB FORMAT

162 ANSWER 4 OF 9 HOAPUS COPYRIGHT 2011 ACS

ACCESSION NUMBER: 1998:1496826 HOAPUS

DOCUMENT NUMBER: 129:149166

TITLE: .alpha.-Fluorination of o-phenylsulfinyl-L-arabicyclo[2.2.1]heptan-3-one and synthesis of 2'-fluoro substituted carbocvir

AUTHOR(S): Toyota, Akemi; Nishimura, Akiko; Kaneko, Chikara

CORPORATE SOURCE: Pharmaceutical Institute, Tohoku University, Sendai, 980-8578, Japan.

SOURCE: Tetrahedron Letters 1998, 39(16), 467-470

ISSN: 0040-4039; ISSN: 0040-4039

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 129:149166

AB Fluorination of phenylsulfinyl bicycloamide using mol. fluorine proceeded preferentially with inversion of the carbon atom having the sulfinyl group to afford .alpha.-fluorinated sulfonyl bicycloamide in fair yield. The fluorinated sulfonyl bicycloamide was converted to 2'-fluoro substituted carbocvir via reductive desulfonylchlorination.

162307-09-7

EN: ECT Reagent ; EN: Reagent or Reagent

.alpha.-Fluorination of o-phenylsulfinyl-L-arabicyclo[2.2.1]heptan-3-one and synthesis of 2'-fluoro substituted carbocvir

EN 162307-09-7P ECT

EN 162307-09-7P ECT

N

A

REFERENCE COUNT: 11 THERE ARE 11 OTHER REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE AB FORMAT

144 ANSWER 1 OF 4 HTABING COPYRIGHT 1991 ADP  
 APPLICATION NUMBER: 1981-09-01 HTABING  
 DOCUMENT NUMBER: 144-0001  
 TITLE: Preparation of bicyclic amides as intermediates for  
 bicyclic nucleosides  
 INVENTOR(S): Matsuda, Shinya  
 PATENT ASSIGNMENT: Matsuda, Shinya, Japan  
 AUTHOR: Dr. Masao Takagi, Matsuda, Shinya  
 GEN: HTABING  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY AND PUB. INFO: 1  
 PATENT INFORMATION:

PATENT NO.	PUBL. DATE	APPLICATION NO.	DATE
JP 144-0001	1981-09-01	1981-09-01	1981-09-01
OTHER PUBLICATION:	MATPAT 144-0001		

C

N

P

I

AB Bicycloamides 1 (R = acyl, alkoxybenzyl), useful as intermediates for  
 cycloaridine (antiviral agent), etc., are prepd. Epoxides of  
 1-acetyl-2-azabicyclo[2.2.1]hept-5-en-3-one with m-chloroperoxybenzoic acid  
 gave 1 (R = Ac).  
 IT 162307-09-7P  
 RI: RCT (Reactant); OFN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent);  
 (repr. of bicycloamides as intermediates for carbocyclic nucleosides)  
 RN 162307-09-7 HTABING  
 CN 1-Azabicyclo[2.2.1]hept-5-en-3-one, 1-acetyl- RCT HTABING NAME

N

AC

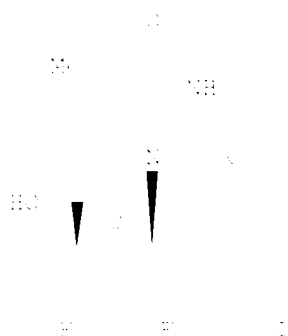
145 ANSWER 1 OF 4 HTABING COPYRIGHT 1991 ADP  
 APPLICATION NUMBER: 1981-09-01 HTABING  
 DOCUMENT NUMBER: 145-0001  
 TITLE: Synthesis of bicyclic amides and their related compounds  
 1. A bicyclic amide compound of the formula (I) is  
 prepared by reacting a bicyclic amide compound of the formula (II) with  
 an acid anhydride in the presence of a base.  
 2. A bicyclic amide compound of the formula (I) is  
 prepared by reacting a bicyclic amide compound of the formula (II) with  
 an acid anhydride in the presence of a base.  
 3. A bicyclic amide compound of the formula (I) is  
 prepared by reacting a bicyclic amide compound of the formula (II) with  
 an acid anhydride in the presence of a base.  
 4. A bicyclic amide compound of the formula (I) is  
 prepared by reacting a bicyclic amide compound of the formula (II) with  
 an acid anhydride in the presence of a base.

CORPORATE SOURCE: Pharmaceutical Inst., Tenchu Univ., Sendai, 981-85, Japan.  
 SOURCE: Tetrahedron Letters (1997), 38 11, 6103-6  
 CODEN: TELEAY; ISSN: 0040-4039  
 PUBLISHER: Elsevier  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 124:656f  
 AB 1-Cycloradine, an L-lysine derived cyclic amine having anti-HIV activity, has been synthesized from L-lysine and formaldehyde in only seven steps. The method involves the novel ring closure of epoxide by radical ring participation.  
 11 162307-09-7P  
 RE: RCT Reagent ; SYN Synthetic preparation ; PREP Preparation ; RACT Reagent or reagent  
 (prepn. of the antiviral agent cycloradine from an L-lysine derivative via regioselective epoxide ring cleavage)  
 RN 162307-09-7P HOAPLUS  
 CN L-Asparicyclo[2.2.1]hept-5-en-3-one, 1-acetyl- (CA INDEX NAME)

11

As

162 ANSWER 7 OF 9 HOAPLUS COPYRIGHT 2002 ACS  
 ACCESSION NUMBER: 1995:321844 HOAPLUS  
 DOCUMENT NUMBER: 124:656f  
 TITLE: Iodofluorination of L-asparicyclo[2.2.1]hept-5-en-3-ones and related compounds: regio- and stereoselectivities  
 AUTHOR(S): Iiyata, Akemi; Ono, Yoshinori; Kaneko, Shikara  
 CORPORATE SOURCE: Pharmaceutical Inst., Tenchu Univ., Sendai, 981-85, Japan.  
 SOURCE: Tetrahedron Letters (1995), 36 34, 6103-6  
 CODEN: TELEAY; ISSN: 0040-4039  
 PUBLISHER: Elsevier  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 124:656f  
 AB Iodofluorination of L-asparicyclo[2.2.1]heptenes and cyclopentenylamines with the NH2 group in the allylic position and the regio- and stereoselectivity were studied.  
 11 162307-09-7  
 RE: RCT Reagent ; RACT Reagent or reagent  
 (regio- and stereoselectivity in iodofluorination of asparicyclo[2.2.1]heptenes and related compounds)  
 RN 162307-09-7P HOAPLUS  
 CN L-Asparicyclo[2.2.1]hept-5-en-3-one, 1-acetyl- (CA INDEX NAME)



162307-09-7

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

[illegible][illegible]

NAME ANSWER : OF 4 HWAELIN COPYRIGHT 21 1 ACC  
 ATENTION NUMBER: 144840726 HWAELIN  
 DOCUMENT NUMBER: 144840726  
 TITLE: Synthesis of nucleosides and related compounds.  
 Addition of molecular chlorine to pyrimidine-2,4,6-tri-  
 one derivatives and conversion to thioine-antithio-  
 carbocyclic nucleosides  
 AUTHOR(S): Toyota, Akemi; Habauchi, Chie; Kikuchi, Nobuya;  
 Katoke, Chikara  
 CORPORATE SOURCE: Pharmaceutical Institute, Tohoku University, Sendai,  
 980, Japan.  
 SOURCE: Tetrahedron Letters (1994), 35(31), 5665-8  
 CODEN: TETLBY; ISSN: 0040-4039  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 GI

$$\begin{array}{ccc} \text{N} & & \text{NH} \\ | & & | \\ \text{N} & & \text{N} \end{array} \quad \text{NH}_2$$


162307-09-7

R1: R1T (Rear) ; R2T: Rear ; R3: Front  
 stereo-left: Lch. of bicyclohexane with chlorine in synapse ;  
 stereo-R1: R1, not with R2 or R3

[illegible]

# 1900-1901

1900

1901

== mark as required

1.67 ANSWER 1 OF 4 CASREACT

APPLICATION NUMBER: 10/11/84  
 TITLE: Process for preparing chiral intermediates  
 INVENTOR(S): Lawson, Michael John; MacLennan, Kenneth; Wallace, Christopher John  
 PATENT ASSIGNEE(S): Glaxo Group Limited, UK  
 ADDRESS: 100/101, High St., London, E1C 6JF  
 CURRENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY APP. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	FILED DATE	APPL. NO. DATE
W 9910019	A1 1998-04-04	W 1998-EP01291 1998-04-04
N: AL, AM, AT, AU, BA, BB, BE, BF, BY, CA, CH, CN, DE, DK, EE, ES, FI, FR, GE, GR, HU, ID, IL, IS, JP, KE, KR, KP, KK, KZ, LG, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, VE, VN, YU, ZA, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG		
AU 9897386	A1 19990316	AU 1998-97386 19990320
AT 988897	B2 20013827	
EP 1003933	A1 20000131	EP 1998-00131 1998-01-01
R: AT, BE, CH, DE, DK, ES, FR, GE, GR, IT, LU, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG		
BR 410402	A 1998-01-01	BR 1998-01041 1998-01-01
FI 200104354	T1 1998-01-01	FI 1998-01041 1998-01-01
NO 9906368	A 1998-01-01	NO 1998-0368 1998-01-01
US 6840887	B1 1998-01-01	US 1998-448887 1998-01-01
PRIORITY APPLN. INFO.:		GB 1997-17928 19980822 WO 1998-EP0291 19980820

OTHER SOURCE(S): MARPAT 130:208877  
 01

02

03

04 The present invention relates to a process for the production of substantially enantiomerically pure intermediates of formula (I), wherein R is an aryl group and R' is a hydrogen atom, and the process is characterized by treating the raw material with an enzyme derived from bacillus sp.

EX 1 OF 4

1. 1,4-dihydro-2,6-dimethyl-4-pyridinecarboxamide  
2. 1,4-dihydro-2,6-dimethyl-4-pyridinecarboxamide

Step 1



REF: 1ST Int. Appl., 8810114, 14 Mar 1988

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> d ind 1

- 167 ANSWER 1 OF 4 CASREACT COPYRIGHT 2002 AMS  
 17 ICM C12P041-00  
 ICS C12P013-00; C07D2204-12  
 CC 16-2 (Fermentation and Bioindustrial Chemistry)  
 ST lactam arabicycloheptenone resoln. **subtilisin**  
 11 Resolution (separation)  
 (biol.; prepg. enantiomerically enriched N-derivatized lactams)  
 17 16360-56-4PP, N-protected  
 RL: BMF (Bioindustrial manufacture); BFN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)  
 (prepg. enantiomerically enriched N-derivatized lactams)  
 17 16360-18-7F 16360-28-1F  
 RL: BFN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)  
 (prepg. enantiomerically enriched N-derivatized lactams)  
 17 16360-18-7F  
 RL: BFN (Biosynthetic preparation); BFR (Purification or recovery); BFI (Reactant); BIOL (Biological study); PREP (Preparation); BAI (Reactant or Reagent)  
 (prepg. enantiomerically enriched N-derivatized lactams)  
 17 16360-18-7F 16360-18-7F  
 RL: BFN (Biological process); BFI (Biological study, unclassified); BFI (Reactant); BIOL (Biological study); BFI (Process); BAI (Reactant or Reagent)  
 (prepg. enantiomerically enriched N-derivatized lactams)  
 17 16360-18-7F, Savinase  
 RL: BAI (Reactant or Reagent); BFI (Reactant)  
 (prepg. enantiomerically enriched N-derivatized lactams)



17 04 91 17 04 91

INVENTOR(S): Bernegger-Egli, Christine; Birn, Ilon M.; Bossard, Pierre; Prien, Walter; Brax, Frank; Burdori, Knut; Bus, Laurent; Eiter, Kay-Jaran; Hirscher, Ines; Juter, Martin; Urban, Eva Maria

PATENT ASSIGNEE(S): Lonza A.-G., Swiss; Bernegger-Egli, Christine; Birn, Ilon M.; Bossard, Pierre; Hirscher, Walter; Brax, Frank; Burdori, Knut; Bus, Laurent

SOURCE: PCT Int. Appl., 48 pp.  
CODEN: SIXMDL

DOCUMENT TYPE: Patent  
LANGUAGE: German  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9748529	A1	19971214	WO 1997-EP2438	19970510
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GR, HC, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, KE, LS, MW, SE, SG, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
CA 2253977	AA	19971204	CA 1997-2253977	19970530
AT 9731705	A1	19980105	AT 1997-31701	19970530
EP 964348	A1	19990331	EP 1997-91719	19970530
R: AT, BE, CH, DE, DK, ES, FR, GB, IE, IT, LI, NL, SE, PT, IE, FI				
CN 1220695	A	19990623	CN 1997-135182	19970530
JP 2000512488	T2	20000926	JP 1997-541631	19970530
KR 2000016124	A	20000325	KR 1996-719691	19961123
US 6369850	B1	20000409	US 1999-124620	19990601
PRIORITY APPL. INFO.:				
			CH 1996-1351	19960530
			CH 1997-282	19970510
			CH 1997-318	19970510
			WO 1997-EP2438	19970530

OTHER SOURCES : MARPAT 116:32314  
41

CH 41

17 04 91 17 04 91

1. *Chlorophyll a* and *Chlorophyll b* were determined by the method of Arar and Collins (1971). The concentration of chlorophylls was expressed as  $\mu\text{g mL}^{-1}$  of the sample.

1. **enzymes** which hydrolyse the polypeptide chains. These  
 include: - The intestinal and pancreatic  $\alpha$ -amino polypeptidases  
 (e.g. 10,40 or 11,40 - leucine-4-aminomethyl-7-oxo-10-oxo-  
 and 10,40 or 10,40 - amin. al. acid. in 10,40 or 10,40 -  
 leucine).

$\frac{1}{2} \left( \frac{1}{2} \right) = \frac{1}{4}$

1. NaOH, EtOH  
2. HCl, Water

PATENT NO.		KIND		DATE		APPLICATION NO.		DATE																																																																																																																																																																																																																																																																																																																											
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WO 9703053		A1		19970130		WO 1996-031179		19960310																																																																																																																																																																																																																																																																																																																											
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RW:		KE	KG	KL	KM	KN	KO	KR	KU	KV	KW	KX	KY	KZ	LA	LB	LC	LD	LE	LF	LG	LH	LI	LJ	LK	LL	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LY	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	MK	ML	MM	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NC	NE	NG	NH	NI	NL	NO	NP	NR	NT	NU	NV	NW	NY	NZ	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ	PA	PB	PC	PD	PE	PF	PG	PH	PI	PJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	QJ	QK	QL	QM	QN	QO	QP	QQ	QR	QS	QT	QU	QV	QW	QX	QY	QZ	RA	RB	RC	RD	RE	RF	RG	RH	RI	RJ	RK	RL	RM	RN	RO	RP	RQ	RR	RS	RT	RU	RV	RW	RX	RY	RZ	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST	SV	SW	SY	SZ	TA	TB	TC	TD	TE	TF	TG	TH	TI	TJ	TK	TL	TM	TN	TO	TP	TQ	TR	TS	TT	TU	TV	TW	TX	TY	TZ	UA	UB	UC	UD	UE	UF	UG	UH	UI	UJ	UK	UL	UM	UN	UO	UP	UQ	UR	US	UT	UU	UV	UW	UX	UY	UZ	VA	VB	VC	VD	VE	VF	VG	VH	VI	VJ	VK	VL	VM	VN	VO	VP	VQ	VR	VS	VT	VU	VV	VS	VT	VU	WV	WX	WY	WZ	XA	XB	XC	XD	XE	XF	YG	YH	YI	YJ	YK	YL	YM	YN	YO	YP	YQ	YR	YS	YT	YU	YV	YW	YZ	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZH	ZI	ZJ	ZK	ZL	ZM	ZN	ZO	ZP	ZQ	ZR	ZS	ZT	ZU	ZV	ZW	ZX	ZY	ZZ
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1. 凡在本市行政区域内从事经营活动的个体工商户，均应当依法向所在地市场监督管理部门申请注册登记，领取营业执照。

RXN 1 1

N H Vinyl acetate, liquid,  
 100% pure



N H

REF: J. T. Ind. Appl., 1930, 1, 1, 1931  
 NCT: 110 trans-1,1,1,1-tetrachloro-2,2,2,2-tetrafluoroethane

-&gt; ind 3

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IC ICM C07D221-02

ICS C07D268-04; C07D268-28; C07D278-04; C07D278-10; C07D491-08;  
 C07D491-06

CC 27-16 (Heterocyclic Compounds (One Hetero Atom))

ST anabicycloheptenone hydroxymethyl; hydroxymethylation anabicycloheptenone

IT 157732-10-0F 157732-11-1F 157810-20-3F 183674-62-6F 187675-95-2F

187676-96-3F 187675-97-4F 187675-98-5F 187675-99-6F 187676-00-2F

RI: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP

Preparation:

prepn. of 2-(hydroxy- or acyloxymethyl)-2-anabicyclo[2.2.1]hept-5-en-3-ones and analogs

IT 27-26-4, 2,2-Dimethoxypropane 111-04-4, Potassium chloride 141-03-3,

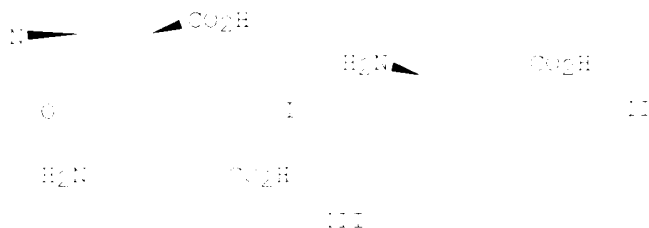
Potassium chloride 44-38-3, 2-Anabicyclo[2.2.1]hept-5-en-3-one

RI: RCT (Reactant); RACT (Reactant or reagent)

prepn. of 2-(hydroxy- or acyloxymethyl)-2-anabicyclo[2.2.1]hept-5-en-3-ones and analogs

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100



AB A series of cyclopentane and cyclopentane analogs of GABA were prepared utilizing a thermal cis-trans isomerization of the phthalimide (meta, gamma-unsat. acid I is the key step to obtain trans-aminocyclopentenecarboxylic acid II. Res. In. : some of the patent GABA analogs, in particular (+)-, (4R)- and (-)-, (4R)-aminocyclopentenecarboxylic acid III was achieved by crystn. of isopropylidene-β-benzyloxycarbonyl esters or pivalolactone esters of the phthalimido-protected intermediates.

EX. 1: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100



Ref: Australian Journal of Chemistry, 1961, 14, 1-4; 1962, 15, 1-4

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

- aminocyclopentene-2-carboxylic acid; anal. activity  
aminocyclopentene-2-carboxylic acid; anal. activity; anal. activity  
17 Resolution  
18 of aminocyclopentene-2-carboxylic acid  
19 N-acylation of aminocyclopentene-2-carboxylic acid  
20 Molecular structure-biological activity relation  
21 GABAergic agonist, of aminocyclopentene-2-carboxylic acid derivatives  
22 1-4-dioxane  
23 RL: RCT (Reactant); RACT (Reactant or reagent)  
24 amidation of, of aminocyclopentene-2-carboxylic acid  
25 1-4-dioxane, reactions  
26 RL: RCT (Reactant); RACT (Reactant or reagent)  
27 cyclization reaction of, with tosyl cyanide  
28 1-4-dioxane  
29 RL: RCT (Reactant); RACT (Reactant or reagent)  
30 esterification of, with phthalimidocyclopentene-2-carboxylic acid  
31 chloride  
32 1-4-dioxane  
33 RL: RCT (Reactant); RACT (Reactant or reagent)  
34 esterification of, with phthalimidocyclopentene-2-carboxylic acid  
35 chlorides  
36 1-4-dioxane-5-yl, Tosyl Cyanide  
37 RL: RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
38 (generation and cycloaddn. reaction of, with cyclopentadiene)  
39 1-4-dioxane-7-yl-3-yl  
40 RL: SPN (Synthetic preparation); PREP (Preparation)  
41 (prepn. and GABAergic agonist activity of  
42 1-4-dioxane-9-yl-7-yl  
43 RL: SPN (Synthetic preparation); PREP (Preparation)  
44 (prepn. and conversion of, to chiral esters)  
45 1-4-dioxane-9-yl-7-yl 1-4-dioxane-9-yl-7-yl 1-4-dioxane-9-yl-7-yl  
46 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
47 (Reactant or reagent)  
48 (prepn. and hydrazinolysis of)  
49 1-4-dioxane-7-yl-3-yl 1-4-dioxane-7-yl-3-yl  
50 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
51 (Reactant or reagent)  
52 (prepn. and hydrogenation of)  
53 1-4-dioxane-9-yl-7-yl 1-4-dioxane-9-yl-7-yl 1-4-dioxane-9-yl-7-yl  
54 1-4-dioxane-9-yl-7-yl 1-4-dioxane-9-yl-7-yl  
55 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
56 (Reactant or reagent)  
57 (prepn. and hydrazinolysis of)  
58 1-4-dioxane-9-yl-7-yl 1-4-dioxane-9-yl-7-yl 1-4-dioxane-9-yl-7-yl  
59 1-4-dioxane-9-yl-7-yl 1-4-dioxane-9-yl-7-yl 1-4-dioxane-9-yl-7-yl  
60 RL: SPN (Synthetic preparation); PREP (Preparation)  
61 (prepn. of)  
62 1-4-dioxane-9-yl-7-yl  
63 RL: SPN (Synthetic preparation); PREP (Preparation)  
64 (prepn., separation, and conversion into chiral phthalate ester)  
65 1-4-dioxane-9-yl-7-yl 1-4-dioxane-9-yl-7-yl  
66 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
67 (Reactant or reagent)  
68 (prepn., hydrazinolysis, and hydrogenation of)  
69 1-4-dioxane-9-yl-7-yl  
70 RL: SPN (Synthetic preparation); PREP (Preparation)  
71 (prepn., hydrazinolysis, and hydrogenation of)  
72 1-4-dioxane-9-yl-7-yl  
73 RL: RCT (Reactant); RACT (Reactant or reagent)

- reaction of, with aminocyclopenteneacetic acid
- 17 22-72-3, sodium p-toluenesulfonate
- 18: RDT Reagent; RALT Reagent & reagent
- reaction of, with sodium p-toluenesulfonate, sodium p-toluenesulfonate
- 19 22-72-4, sodium p-toluenesulfonate
- 20: RDT Reagent; RALT Reagent & reagent
- reaction of, with p-toluenesulfonate



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